IN THE CLAIMS

Please amend claims 1-5, 7-14, 19, 22-29, and 31-36 as follows below.

Please add new claims 37-50 as follow below.

The following listing of claims replaces all prior versions, and listings, of claims in the application:

MARKED UP VERSION OF CLAIMS

1. (Currently Amended) A fiber optic module for transmitting and/or receiving data, the fiber optic module comprising:

a printed circuit board, the printed circuit board having high frequency electrical components mounted to a first surface and a first ground plane formed on the first surface near a first edge;

a plurality of fiber optic receptacles, the plurality of fiber optic receptacles coupled to the printed circuit board in parallel; and

an electromagnetic interference shield, the ~~electro-magnetic~~ electromagnetic interference shield coupled to the first ground plane of the printed circuit board such that it covers the high frequency electrical components mounted to the first surface and forms a first guide rail near the

first edge of the printed circuit board.

2. (Currently Amended) The fiber optic module of claim 1, wherein [[,]]

the first guide rail is formed to slideably couple [[to]] into and out of a first guide rail slot of a module cage.

3. (Currently Amended) The fiber optic module of claim 1, further comprising:

an optical block, the optical block having a plurality of lenses, each of the plurality of lenses for coupling photons between a plurality of fiber optic cables coupled to the plurality of fiber optic ~~receptacle~~ receptacles and the fiber optic module.

4. (Currently Amended) The fiber optic module of claim 3, wherein [[,]]

the optical block has a plurality of optical ports each having a fiber ferule inserted therein for aligning the fiber optic cables to the plurality of lenses of the optical block.

5. (Currently Amended) The fiber optic module of claim 3, wherein [[,]]

the optical block has a plurality of openings, each of

the plurality of openings facing each of the respective plurality of lenses on a second side, each of the plurality of openings having sufficient size to accept a transmitter or a receiver.

6. (Original) The fiber optic module of claim 5, further comprising:

a plurality of transmitters coupled into the plurality of openings in the optical block, each of the plurality of transmitters including a vertical cavity surface emitting laser.

7. (Currently Amended) The fiber optic module of claim 5 further comprising:

a plurality of receivers coupled into the plurality of openings in the optical block, each of the plurality of receivers including a photodiode~~, and a trans-impedance amplifier~~.

8. (Currently Amended) The fiber optic module of claim 5 further comprising:

a plurality of transmitters and a plurality of receivers coupled into the plurality of openings in the optical block, each of the plurality of transmitters including a vertical cavity surface emitting laser and each of the plurality of receivers including a photodiode.

9. (Currently Amended) The fiber optic module of claim 1, wherein [[,]]

the electromagnetic interference shield couples to the ground plane of the printed circuit board such that it covers the high frequency electrical components mounted to the first surface and forms a second guide rail near a second edge of the printed circuit board.

10. (Currently Amended) The fiber optic module of claim 9, wherein [[,]]

the electromagnetic interference shield sandwiches the printed circuit board and the first guide rail and the second guide rail extend outside the electromagnetic interference shield on opposites sides of the fiber optic module.

11. (Currently Amended) The fiber optic module of claim 1 further comprising:

a processor coupled to the printed circuit board, the processor to control the transmitting, the receiving, or both the transmitting and receiving ~~transmitting/receiving~~ of data through at least one of the plurality of fiber optic receptacles.

12. (Currently Amended) The fiber optic module of

claim 1, further comprising:

the plurality of fiber optic receptacles ~~being~~ is at least four fiber optic receptacles; and,

the printed circuit board ~~having~~ has a hot-pluggable connector to couple an electrical signal between the printed circuit board and an electrical device located off of the printed circuit board.

13. (Currently Amended) The fiber optic module of Claim 12, wherein

the fiber optic receptacles are LC receptacles.

14. (Currently Amended) The fiber optic module of Claim 12, wherein

the fiber optic receptacles are MT - RJ receptacles.

15. (Original) The fiber optic module of claim 1, wherein

the printed circuit board has an electrical component to convert signals between an electrical form and an optical form.

16. (Original) The fiber optic module of claim 1, wherein

the printed circuit board has surface mount electrical components.

17. (Original) The fiber optic module of claim 1, wherein

the printed circuit board has through-hole electrical components.

18. (Original) The fiber optic module of claim 1, wherein

said printed circuit board includes pins outside of said electromagnetic interference shield, said pins being adapted to being soldered to a printed circuit board external to said fiber optic module.

19. (Currently Amended) A fiber optic system for transmitting and/or receiving data, comprising:

a fiber optic module, the fiber optic module having one or more guide rails electrically coupled to a ground plane of a printed circuit board and electrically coupled to an electromagnetic shield surrounding high frequency electrical components mounted to the printed circuit board, the fiber optic module further having a plurality of fiber optic receptacles at one end and one or more electrical connectors having connectors coupled to signal traces at an opposite end; and,

a module cage to couple to the fiber optic module, the module cage having a housing with an open end to accept the

fiber optic module and one or more guide slots on sides of an interior surface; ~~, the one or more guide slots to slideably and electrically couple to~~

wherein the one or more guide rails of the fiber optic module to slideably couple into the one or more guide slots of the module cage to electrically couple thereto and the one or more guide rails of the fiber optic module to slideably couple out of the one or more guide slots of the module cage to electrically decouple therefrom.

20. (Original) The fiber optic system of claim 19, further comprising:

a host printed circuit board to couple to the module cage and the fiber optic module, the host printed circuit board including

a ground plane to electrically couple to the one or more guide rail slots of the module cage, and

one or more connectors to couple to the one or more electrical connectors of the fiber optic module and their respective pins.

21. (Original) The fiber optic system of claim 19, further comprising:

a lock mechanism, the lock mechanism having

a rocker arm with a hook to couple to a guide

rail of the fiber optic module to lock it in place, and

a cam to couple to a cutout of a sliding arm and decouple the hook of the rocker arm from the guide rail of the fiber optic module.

22. (Currently Amended) The fiber optic system of claim 19, further comprising:

an ejection mechanism, the ejection mechanism having

a sliding arm having a first end and a second end, the sliding arm to slide in response to a force at the first end, and

a lever arm with a cradle at a pivoting end, the cradle to couple to an end of the printed circuit board of the fiber optic module to push out and eject the fiber optic module, an opposite end of the lever arm coupled to the sliding arm to cause the lever arm to pivot about the pivoting end and eject the fiber optic module in response to the force at the first end of [[when]] the sliding arm ~~is pushed in by a user to unlock and eject the fiber optic module~~.

23. (Currently Amended) The fiber optic system of claim 19, wherein [[,]]

the module cage further has one or more tabs to

electrically couple the one or more guide slots to the ground plane of the host chassis ground.

24. (Currently Amended) The fiber optic system of claim 19, wherein [[,]]

each of the one or more guide slots of the module cage has a flared opening to more easily accept the one or more guide rails of the fiber optic module.

25. (Currently Amended) The fiber optic system of claim 19, wherein [[,]]

the module cage is formed of a conductive material to provide another electromagnetic shield.

26. (Currently Amended) The fiber optic system of claim 19, wherein [[,]]

the fiber optic module is a fiber optic transmitter and the fiber optic transmitter has a processor to separately monitor the output optical power and adjust the transmitter of each communication channel in response to the measured output optical power in each respectively.

27. (Currently Amended) The fiber optic system of claim 19, wherein [[,]]

said fiber optic module and said module cage conform to [[is]] a form factor of a Gigabit Interface Converter (GBIC)

[[GBIC]] package.

28. (Currently Amended) The fiber optic system of claim 27, wherein [[,]]
said fiber optic receptacles are LC receptacles.

29. (Currently Amended) A method for ~~of shunting electromagnetic radiation from high frequency electrical components of~~ a fiber optic module ~~to ground, the method~~ comprising:
providing a printed circuit board;
mounting high frequency electrical components in a common area on a surface of the printed circuit board;
providing an electromagnetic shield to surround the common area where the high frequency electrical components are mounted to the printed circuit board; and
forming one or more guide rails ~~rail slots~~ in the printed circuit board by coupling the electromagnetic shield to the printed circuit board, the one or more guide rails ~~rail slots~~ electrically coupled to a ground plane of the printed circuit board and electrically coupled to the electromagnetic shield, the one or more guide rails to slide into and out of one or more guide rail slots of a module cage.

30. (Original) The method of claim 29 further

comprising:

sliding the fiber optic module into a module cage coupled to a ground plane of a host printed circuit board, the one or more guide rails of the fiber optic module to slideably and electrically couple to one or more guide rail slots of the module cage.

31. (Currently Amended) A fiber optic system for transmitting and/or receiving data, the fiber optic system comprising:

a fiber optic module having four channels ~~for~~ of parallel optical transmitting and/or receiving of data;

a module cage complying with a standard SC duplex Gigabit Interface [[Card]] Converter (GBIC) package, the module cage to slidingly couple and decouple with ~~for receiving~~ said fiber optic module; and,

wherein the fiber optic module has

a single printed circuit board,

four optical receptacles that fit in parallel together into a standard SC duplex Gigabit Interface Converter [[Card]] (GBIC) package along an edge of said single printed circuit board, and

an electrical component confined to fit within [[said]] a GBIC package ~~on a~~ and is coupled to said single printed circuit board, said electrical component to allow hot-plugging of said

fiber optic module into said module cage.

32. (Currently Amended) The fiber optic system of claim 31, wherein

the four ~~fiber~~ optical receptacles are LC receptacles.

33. (Currently Amended) The fiber optic system of claim 31, wherein

the four ~~fiber~~ optical receptacles are MT - RJ receptacles.

34. (Currently Amended) A fiber optic system for transmitting and/or receiving data, the fiber optic system comprising:

a fiber optic module, the fiber optic module having four channels ~~for~~ of parallel optical transmitting and/or receiving of data, the fiber optic module having [[;]]

a single printed circuit board,

four optical receptacles that fit in parallel together into a standard SC duplex package along an edge of said single printed circuit board,

an electrical component associated with said fiber optic module confined within a standard SC duplex package and ~~on a~~ is coupled to said single printed circuit board, [[;]] and

a fixed pin-type electric connector coupled

to said single printed circuit board, said fixed pin-type electric connector ~~to allow said fiber optic module~~ to be soldered onto a host printed circuit board.

35. (Currently Amended) The fiber optic system of claim 34, wherein

the four ~~fiber~~ optical receptacles are LC receptacles.

36. (Currently Amended) The fiber optic system of claim 34, wherein

the four ~~fiber~~ optical receptacles are MT - RJ receptacles.

37. (New) The fiber optic system of claim 19, further comprising:

a lock mechanism coupled to the module cage, the lock mechanism having

a rocker arm with a hook to couple to one of the guide rails of the fiber optic module to hold the fiber optic module and the module cage coupled together, and

a cam to couple to a cutout of a sliding arm and decouple the hook of the rocker arm from the one of the guide rails of the fiber optic module; and,

an ejection mechanism coupled to the module cage, the ejection mechanism including

the sliding arm having a first end, a second end, and the cutout, the sliding arm to slide in response to a force at the first end, and

a lever arm with a cradle at a pivoting end, the cradle to couple to an end of the printed circuit board of the fiber optic module to push out and eject the fiber optic module, an opposite end of the lever arm coupled to the sliding arm to cause the lever arm to pivot about the pivoting end and eject the fiber optic module in response to the force at the first end of the sliding arm.

38. (New) The fiber optic system of claim 27, wherein said fiber optic receptacles are MT-RJ receptacles.

39. (New) The fiber optic system of claim 27, wherein said plurality of fiber optic receptacles is at least four fiber optic receptacles sized to conform to the form factor of a GBIC package to provide at least four channels of communication.

40. (New) The method of claim 30, wherein electromagnetic radiation from the high frequency electrical components of the fiber optic module are shunted

to ground through the electrical coupling between the one or more guide rails of the fiber optic module and the one or more guide rail slots of the module cage.

41. (New) The fiber optic system of claim 31, wherein the fiber optic module further includes

an optical block with four lenses and four openings aligned with the four lenses respectively, and

four light transmitters coupled into the four openings respectively, each of the four light transmitters having terminals coupled to the single printed circuit board.

42. (New) The fiber optic system of claim 31, wherein the fiber optic module further includes

an optical block with four lenses and four openings aligned with the four lenses respectively, and

four light receivers coupled into the four openings respectively, each of the four light receivers having terminals coupled to the single printed circuit board.

43. (New) The fiber optic system of claim 31, wherein the fiber optic module further includes

a pair of optical blocks each having two lenses and two openings aligned with the two lenses respectively, and

two pairs of light transmitters, each pair of light transmitters respectively coupled into the two openings of the pair of optical blocks, each light transmitter having terminals coupled to the single printed circuit board.

44. (New) The fiber optic system of claim 31, wherein the fiber optic module further includes

a pair of optical blocks each having two lenses and two openings aligned with the two lenses respectively, and

two pairs of light receivers, each pair of light receivers respectively coupled into the two openings of the pair of optical blocks, each light receiver having terminals coupled to the single printed circuit board.

45. (New) The fiber optic system of claim 31, wherein said electrical component allowing hot-plugging of said fiber optic module into said module cage is an electrical connector.

46. (New) The fiber optic system of claim 31, wherein

said electrical component allowing hot-plugging of said fiber optic module into said module cage is at least one edge connector of said single printed circuit board.

47. (New) The fiber optic system of claim 34, wherein the fiber optic module further includes

an optical block with four lenses and four openings aligned with the four lenses respectively, and

four light transmitters coupled into the four openings respectively, each of the four light transmitters having terminals coupled to the single printed circuit board.

48. (New) The fiber optic system of claim 34, wherein the fiber optic module further includes

an optical block with four lenses and four openings aligned with the four lenses respectively, and

four light receivers coupled into the four openings respectively, each of the four light receivers having terminals coupled to the single printed circuit board.

49. (New) The fiber optic system of claim 34, wherein

the fiber optic module further includes

a pair of optical blocks each having two lenses and two openings aligned with the two lenses respectively, and

two pairs of light transmitters, each pair of light transmitters respectively coupled into the two openings of the pair of optical blocks, each light transmitter having terminals coupled to the single printed circuit board.

50. (New) The fiber optic system of claim 34, wherein the fiber optic module further includes

a pair of optical blocks each having two lenses and two openings aligned with the two lenses respectively, and

two pairs of light receivers, each pair of light receivers respectively coupled into the two openings of the pair of optical blocks, each light receiver having terminals coupled to the single printed circuit board.

REMARKS

This Amendment is in response to the Office Action mailed on 09/29/2003. In the Office Action, claim 22 was rejected under 35 U.S.C. § 112, second paragraph and claims 1-36 were rejected under 35 U.S.C. § 103(a). Reexamination and reconsideration in view of the amendments and the remarks made herein is respectfully requested.

Applicant has amended claims 1-5, 7-14, 19, 22-29, and 31-36 by this response. Applicant has added new dependent claims 37-50. Accordingly, claims 1-50 are now pending. Of the pending claims, claims 1, 19, 29, 31, and 34 are independent claims.

Applicant believes that no new matter has been added by this response.

I) Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 22 was rejected to under 35 U.S.C. § 112, second paragraph as being indefinite. [Office Action, page 2, paragraph 2]. Applicant respectfully traverses this rejection.

The Office Action pointed out that the limitation "the sliding arm" lacked antecedent basis.

Applicant has amended claim 22 to introduce "a sliding arm" so that "the sliding arm" has antecedent basis. Applicant believes this amendment to claim 22 now makes this objection moot.

Applicant respectfully requests the withdrawal of this objection of claim 22.

II) Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 2, 9, 11-20, and 23-30 were rejected to under 35 U.S.C. § 103(a) as being unpatentable over the combination of U.S. Patent 5,337,396 issued to Chen et al. (Chen) and U.S. Patent 5,117, 476 issued to Yingst et al. (Yingst). [Office Action, page 2, section 5]. Applicant respectfully traverses this rejection.

Claims 3-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chen, Yingst and U.S. Patent 5,005,939 issued to Arvanitakis et al. (Arvanitakis). [Office Action, page 8, section 6]. Applicant respectfully traverses this rejection.

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chen, Yingst and U.S. Patent 6,175,727 issued to Alexander Mostov (Mostov). [Office Action, page 10, section 7]. Applicant respectfully traverses this rejection.

Claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chen, Yingst and U.S. Patent 4,178,051 issued to Kocher et al. (Kocher). [Office Action, page 11, section 8]. Applicant respectfully traverses this rejection.

Claim 22 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Chen, Yingst and U.S. Patent 6,581,830 issued to Jelinek et al. (Jelinek). [Office Action, page 12, section 9]. Applicant respectfully traverses this rejection.

Claims 31-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen. [Office Action, page 12, section 10]. Applicant respectfully traverses this rejection.

Claims 1, 2, 8, 11-12, 19, 29, 31, and 34 have been amended to clarify Applicant's claimed invention. Claim 1 was amended to clarify that the first guide rail is formed near the first edge of the printed circuit board. Claim 2 was amended to clarify that the first guide rail is formed to slideably couple into and out of a first guide rail slot of a module cage. Claim 8 was amended to clarify that each of the plurality of receivers includes a photodiode. Claim 11 was amended to clarify that the processor is coupled to the printed circuit board and what functions that it may optionally control. Claim 12 was amended to clarify that the plurality of fiber optic receptacles is at least four fiber optic receptacles. Claim 19 was amended to clarify that the one or more guide rails of the fiber optic module slideably couple into the one or more guide slots of the module cage to electrically couple thereto and slideably couple out of the one or more guide slots to electrically decouple therefrom. Claim 27 was amended to clarify that the fiber optic module and the module cage conform to a form factor (i.e., the size) of a GBIC package. Claim 29 was amended to clarify that the one or more guide rails of the fiber optic module can slide into and out of one or more guide rail slots of a module cage. Claim 31 was amended to clarify that the module cage slidingly couples and decouples with the fiber optic module. Claim 31 was further amended to clarify that the fiber optic module has a single printed circuit board and that the four optical receptacles are in parallel together along an edge of the single printed circuit board. Claim 34 was amended to clarify that the fiber optic module has a single printed circuit board and that the four optical receptacles are in parallel together along an edge of the single printed circuit board.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion of motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)" [MPEP § 2142; 8th Edition, Rev. 1, Feb. 2003, Pg. 2100-124].

Regarding independent claims 1, 19, and 29, Chen and Yingst do not disclose a guide rail near an edge of a printed circuit board.

The Office Action admits that "Chen fails to specifically teach a plurality of parallel fiber optical receptacles coupled to the printed circuit board and an electromagnetic interference shield, the electro magnetic interference shield coupled to the ground plane of the printed circuit board such that it covers the high frequency electrical components mounted to the surface and forms a first guide rail near the first edge." [Office Action, page 3, lines 1-5].

However, the Office Action alleges that the "teachings of Yingst would have suggested to one skilled in the art that it would have been possible to cover the high frequency electrical components mounted to the surface of a printed circuit board and thereby form a first guide rail near the first edge (as seen in

Figure 4)." [Office Action, page 3, lines 10-13]. Applicant respectfully disagrees.

Yingst discloses "rows of posts 122 extended along the edges of the substrate 112." [Yingst, Col. 4, lines 49-50; see Figs. 2 and 4]. Yingst's posts 122 make the edges of Yingst IC board or substrate 112 unusable as guide rails. Moreover, Yingst's posts 122 couple to Yingst active components and deter any ground plane from being formed on a surface near the edges of Yingst IC board or substrate 112. That is, Yingst does not disclose Applicant's guide rails and teaches away from them.

"A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." [MPEP §2141.02, 8th Edition, Rev. 1, Feb. 2003, Pg. 2100-122; citing W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)]. Moreover, "[i]t is improper to combine references where the references teach away from their combination." [MPEP §2145(X.D.2), 8th Edition, Rev. 1, Feb. 2003, Pg. 2100-157; citing In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)].

Thus, the combination of Chen and Yingst does not disclose an "electromagnetic interference shield coupled to the first ground plane of the printed circuit board such that it covers the high frequency electrical components mounted to the first surface and forms a first guide rail near the first edge of the printed circuit board" as recited in Applicant's amended independent claim 1. [Claim 1 as amended, lines 12-16].

The combination of Chen and Yingst does not disclose a "fiber optic module having one or more guide rails electrically coupled to a ground plane of a printed circuit board and electrically coupled to an electromagnetic shield surrounding

high frequency electrical components mounted to the printed circuit board" as recited in Applicant's amended independent claim 19. [Claim 19 as amended, lines 3-7].

The combination of Chen and Yingst does not disclose "forming one or more guide rails in the printed circuit board by coupling the electromagnetic shield to the printed circuit board, the one or more guide rails electrically coupled to a ground plane of the printed circuit board and electrically coupled to the electromagnetic shield, the one or more guide rails to slide into and out of one or more guide rail slots of a module cage" as recited in Applicant's amended independent claim 29. [Claim 29 as amended, lines 11-18].

Applicant respectfully submits that independent claims 1, 19 and 29 are not made obvious by the combination of Chen and Yingst.

Dependent claims 2-18, 20-28, and 30 were also rejected based on the combination of Chen and Yingst, alone or with an additional prior art reference.

Regarding dependent claims 2 and 30, the Office Action alleges that "the combination of Chen and Yingst teaches that the first guide rail [] is formed to slideably couple to a first guide rail slot (reference numeral 11e in Figure 1 of Chen) of a module cage (reference numeral 11 in Figure 1 of Chen." [Office Action, page 4, lines 1-4]. Applicant respectfully disagrees.

As discussed previously, the combination of Chen and Yingst does not teach a first guide rail. Moreover, neither Chen nor Yingst teaches a module cage. Chen discloses "a housing 10 fabricated out of conductive plastic having a rectangular frame 11". [Chen, Col. 4, lines 28-30]. That is Chen's rectangular

frame 11, cited for support in the Office Action, is part of Chen's housing 10 and not a module cage.

Regarding dependent claim 9, the Office Action alleges that "the combination of Chen and Yingst teaches that the electromagnetic interference shield (reference numeral 126 in Figure 2 of Yingst) couples to the ground plane of the printed circuit board such that it covers the high frequency electrical components mounted to the first surface and forms a second guide rail near a second edge of the printed circuit board (as seen in Figure 4)." [Office Action, page 4, lines 5-9]. Applicant respectfully disagrees.

In accordance with the prior remarks, the combination of Chen and Yingst does not teach a first guide rail. Nor does the combination of Chen and Yingst disclose a second guide rail.

Regarding dependent claim 12, the Office Action alleges that "the combination of Chen and Yingst teaches a plurality of fiber optic receptacles; and, the printed circuit board having a hot-pluggable connector (reference numeral 20c in Figure 1 of Chen, reverence numeral 122, 100 in Figure 5 of Yingst) to couple an electrical signal between the printed circuit board and an electrical device (reference numeral 26 in Figure 1 of Yingst) located off of the printed circuit board." [Office Action, page 5, lines 3-7]. Applicant respectfully disagrees.

Chen does not disclose Chen's pins 20c having a hot-plugability feature. Chen's pins 20c all appear to be of similar lengths. [See Chen's Fig. 1 and 4]. Nor does Yingst disclose Yingst's posts 122, 124, and tab 100 as having any hot-plugability feature. Yingst's posts 122, 124, and tab 100 all appear to be of similar lengths. [See Yingst's Fig. 5 for a side view of Yingst's posts 122, 124, and tab 100].

Regarding claims 20, 23-25, and 27, the Office Action alleges certain additional limitations of a module cage are disclosed by the combination of Chen and Yingst. Applicant respectfully disagrees.

As discussed previously neither Yingst nor Chen disclose a module cage. Therefore, the combination of Chen and Yingst does not disclose any further limitation of a module cage.

Regarding claim 10, the Office Action alleges that "the combination of Chen and Yingst teaches that the first and second guide rail extend outside the electromagnetic interference shield on opposite sides of the fiber optic module." [Office Action, page 10, lines 17-19]. Applicant respectfully disagrees.

As discussed previously, neither Yingst nor Chen disclose any guide rail.

Regarding claim 21, Applicant respectfully submits that the motivation for combining Kocher with Yingst and Chen is not convincing.

The Office Action states that "[o]ne skilled in the art would have been motivated to use a locking mechanism as taught by Kocher in the device of the combination of Chen and Yingst in order to secure the fiber optic module in proper alignment with the inserted fibers." [Office Action, page 11, lines 17-19]. However, Chen and Yingst already disclose locking mechanisms to secure the fiber optic module in proper alignment with inserted fibers.

Chen discloses nibs 15d to couple to a fiber optic cable. [See Chen Figure 3]. Yingst discloses a pair of latches 16 and 17 as part of the fiber optic cable. [Yingst, Figure 1]. There

is little use for Kocher to further secure the fiber optic module in proper alignment with inserted fibers. Moreover, substantial modifications would need to be made to combine Kocher with Chen and Yingst to secure the fiber optic module in proper alignment with inserted fibers.

Thus, the motivation for combining Kocher with Yingst and Chen is not convincing

Regarding claim 22, Applicant respectfully submits that the motivation for combining Jelinek with Yingst and Chen is not convincing.

The Office Action states that "[o]ne skilled in the art would have been motivated to use an ejection mechanism as taught by Jelinek in the device of the combination of Chen and Yingst in order to easily eject the printed circuit board of the module when desired. However, the printed circuit boards of Chen and Yingst are securely fixed in place.

Yingst's transceiver package 22 and IC board 112 is securely fixed in place by "soldering the posts 122,124 of the sub-assembly 69 to the board 24." [Yingst, col. 4, lines 64-65]. In Chen, "[n]onconductive epoxy is applied to points 25 to further securely fix the PCB in the frame 11." [Chen, Col. 5, lines 47-48]. Securely fixed printed circuit boards teach away from ejection.

Thus, the motivation for combining Jelinek with Yingst and Chen is not convincing

Moreover, claims 2-18 depend directly or indirectly from independent claim 1. Claims 20-28 depend directly or indirectly from independent claim 19. Claim 30 depends directly from independent claim 29.

Applicant believes that is has placed independent claims 1, 19, and 29 in condition for allowance such that dependent claims 2-18, 20-28, and 30 depending therefrom with further limitations are also in condition for allowance.

Thus for the foregoing reasons, Applicant respectfully requests the withdrawal of all of the 35 USC 103(a) rejections of claims 1-30.

Regarding independent claims 31 and 34, the Office Action alleges that "Yingst teaches a fiber optic system for transmitting and/or receiving data, comprising: a fiber optic module (Figure 1) having channels (reference numeral 190, 191 in Figure 2) for parallel optical transmitting and/or receiving of data; a module cage (reference numeral 28 in Figure 2); optical receptacles (reference numeral 38, 96, 98 in Figures 2 and 3) that fit into a standard package, an electrical component (reference numeral 70, 71 in Figure 2) confined within said package on a printed circuit board to allow hot-plugging into said cage, and a fixed pin-type electric connector (reference numeral 100 in Figure 3) to allow said fiber optic module to be soldered onto a host printed circuit board (reference numeral 24 in Figure 1)." [Office Action, page 13, lines 1-9]. Applicant respectfully disagrees.

Regarding independent claim 31, Yingst does not disclose a module cage to slidingly couple and decouple with a fiber optic module. The Office Action suggests that Yingst's outer shell 28 discloses Applicant's module cage. [Office Action, page 13, lines 3-4]. However, Yingst's outer shell 28 is a part of Yingst's transceiver module 22. Yingst's "transceiver module 22 includes [,] an outer shell 28". [Yingst, Col. 3, line 26].

Moreover, Yingst's outer shell 28 does not slidingly couple and decouple with Yingst's transceiver module 22.

Moreover with respect to independent claim 31, Yingst does not disclose an electrical component to allow hot-plugging into the module cage. As discussed previously, Yingst does not disclose Yingst's posts 122, 124, and tab 100 as having any hot-plugability feature. Yingst's posts 122, 124, and tab 100 all appear to be of similar lengths. [See Yingst's Fig. 5 for side view of Yingst's posts 122, 124, and tab 100].

Regarding independent claims 31 and 34, the Office Action admits that Yingst does not disclose four channels. "Yingst differs from the claimed invention in that Yingst fails to specifically teach four channels or four optical receptacles complying with a standard SC duplex Gigabit Interface Card (GBIC) package." [Office Action, page 13, lines 12].

However, the Office Action relies on legal precedent to allege that "it would have been obvious to one skilled in the art at the time of the invention was made to use four fiber optical receptacles/channels, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co. 193 USPQ 8.*" [Office Action, page 13, lines 18-21]. Applicant respectfully disagrees.

Applicant respectfully submits that a mere duplication of Yingst does not disclose Applicant's claimed invention. Specifically, a duplication of Yingst does not disclose "four optical receptacles that fit in parallel together into a standard SC duplex Gigabit Interface Converter (GBIC) package." [Applicant's claim 31 as amended, lines 12-14]. The four optical receptacles would need to be decreased in size to fit into the space of two SC optical receptacles. Moreover, a mere

duplication of Yingst would result in two printed circuit boards being used. Applicant has amended independent claims 31 and 34 to clarify Applicant's invention to recite a single printed circuit board.

"As discussed in MPEP § 2144, if the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court." "If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection." [MPEP § 2144.04, Original 8th Edition, Aug. 2001; page 2100-130].

It is important that "four optical receptacles [] fit in parallel together into a standard SC duplex Gigabit Interface Converter (GBIC) package" in order to provide "a fiber optic module having four channels of parallel optical transmitting and/or receiving of data". [Applicant's claim 31, lines 4-5 and 12-14]. Without the four optical receptacles being sized to fit into the space of two SC optical receptacles, a fiber optic module having four channels of parallel optical transmitting and/or receiving would not be provided. Four SC optical receptacles will not fit into the same space as two SC optical receptacles.

Moreover, Applicant respectfully submits that the facts in *St. Regis Paper Co. v. Bemis Co. 193 USPQ 8 (Court of Appeals, Seventh Circuit 1977)* are not substantially similar to the facts in Applicant's patent application and the rejection of Applicant's claims in the Office Action based on Yingst.

St. Regis Paper Co. involved multiple layers of material coupled in parallel together to form a bag. The prior art bag used to make obvious Appellant's bag in *St. Regis Paper Co.* had